# (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

### (19) World Intellectual Property Organization

International Bureau



# A COLIN BUNGERA DI BURAN BURAN

(43) International Publication Date 26 August 2004 (26.08.2004)

#### (10) International Publication Number WO 2004/072376 A1

(51) International Patent Classification7: 23/76 // 17:29, 17:42, 17:55, 21:20, 21:24

D21H 17/72,

(21) International Application Number:

PCT/US2004/003412

- (22) International Filing Date: 6 February 2004 (06.02.2004)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/445,970

7 February 2003 (07.02.2003) US

- (71) Applicant (for all designated States except US): BAYER CHEMICALS CORPORATION [US/US]; 100 Bayer Road, Pittsburgh, PA 15205-9741 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): RYAN, Michael [US/US]; 3 West Farm Ridge, Newtown, CT 06470 (US). BREVARD, William [US/US]; 90 Courtland Hill Street, Stamford, CT 06906 (US).
- (74) Agents: AKORLI, Godfried, R. et al.; Bayer Chemicals Corporation, 100 Bayer Road, Pittsburgh, PA 15205-9741 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ANIONIC FUNCTIONAL PROMOTER AND CHARGE CONTROL AGENT WITH IMPROVED WET TO DRY TEN-SILE STRENGTH RATIO

(57) Abstract: The invention relates to a composition comprising (a) a functional promoter comprising a water-soluble anionic polymer having a molecular weight of at least about 50,000 daltons and a molecular weight charge index value of at least about 10,000; (b) a cationic surfactant component; such that when the composition treats a fibrous substrate, in conjunction with a cationic strength agent, the treated fibrous substrate exhibits (i) a ratio of wet tensile strength to dry tensile strength ranging from about 1:5 to about 1:2 and (ii) an increase in a ratio of wet tensile strength to dry tensile strength of at least about 10%, as compared to when the fibrous substrate is treated with the functional promoter and without a surfactant. The invention also relates to a paper product made with such a system, and method for imparting wet strength to a paper product with the functional promoter.

